

What is claimed is:

1. A method for acquiring a first signal transmitted from a first satellite, comprising:
  - acquiring a second signal transmitted from a second satellite; and
  - searching for the first signal within an expected offset range from the acquired second signal until the first signal is acquired.
2. The method of claim 1, wherein the first satellite and the second satellite are different satellite types, each belonging to a different satellite constellation.
3. The method of claim 2, wherein the second satellite is a low earth orbit satellite.
4. The method of claim 3, wherein the first satellite is a GPS satellite and the first signal comprises a GPS Y code signal.
5. The method of claim 4, wherein the second satellite is an Iridium satellite.
6. The method of claim 5, wherein the expected offset range is a function of propagation delay and a likely clock error between the first signal from the GPS satellite and the second signal from the Iridium satellite.
7. The method of claim 6, wherein the expected offset range is preset.
8. The method of claim 7, wherein the expected offset range is 6 milliseconds.
9. The method of claim 5, further comprising estimating a position of a user with respect to the Iridium satellite.
10. The method of claim 9, wherein the user position is estimated as a function of position within a multiple beam antenna.
11. The method of claim 10, wherein the expected offset range is a function of the user position.
11. The method of claim 9, wherein user position is estimated as a function of a Doppler profile of the Iridium satellite.
- 25 12. The method of claim 10, wherein the expected offset range is a function of the user position.



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13. A device for acquiring a first signal transmitted from a first satellite, comprising:  
a first receiver configured to acquire the first signal; and  
a second receiver coupled to the first receiver, the second receiver configured to  
acquire a second signal transmitted from a second satellite and to send to the  
first receiver an estimate of an offset between the first signal and the second  
signal;  
5 whereby the first receiver can acquire the first signal by searching for the first  
signal within an expected offset range from the acquired second signal until  
the first signal is acquired.

10 14. The device of claim 13, further comprising:  
an antenna adapted to receive the first signal and the second signal;  
at least one preamplifier in signal communication with the antenna and at least  
one of the first receiver or the second receiver to amplify at least one of the  
first signal or the second signal; and  
15 a clock coupled to the first receiver and the second receiver.

16. The device of claim 15, wherein the first receiver is a GPS Y code receiver.

20 17. The device of claim 16, wherein the second receiver is an Iridium satellite receiver.

18. The device of claim 17, wherein the second receiver further comprises;  
a hybrid coupler coupled to the bandpass filter to produce inphase and quadrature  
signals;  
25 an inphase analog to digital converter in signal communication with the inphase  
signal;  
a quadrature analog to digital converter in signal communication with the  
quadrature signal; and  
a digital signal processor configured to receive the inphase signal and the  
quadrature signal and to process the signals to acquire the second signal from  
30 the Iridium satellite.



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19. The device of claim 18, wherein the second signal contains ephemeris information for the Iridium satellite.
20. A device for acquiring a first signal transmitted from a first satellite, comprising:
  - a means for acquiring the first signal;
  - a means for acquiring a second signal transmitted from a second satellite; and
  - a means for estimating an offset between the first signal and the second signal; whereby the means for acquiring the first signal searches for the first signal within an expected offset range from the acquired second signal until the first signal is acquired.
- 10 21. The method of claim 20, wherein the first satellite and the second satellite are different satellite types, each belonging to a different satellite constellation.
22. The method of claim 21, wherein the second satellite is a low earth orbit satellite.
23. The method of claim 22, wherein the first satellite is a GPS satellite and the first signal comprises a GPS Y code signal.
- 15 24. The method of claim 23, wherein the second satellite is an Iridium satellite.
25. The method of claim 24, wherein the expected offset range is a function of propagation delay and a likely clock error between the first signal from the GPS satellite and the second signal from the Iridium satellite.
26. The method of claim 25, wherein the expected offset range is preset.
- 20 27. The method of claim 26, wherein the expected offset range is 6 milliseconds.
28. The method of claim 25, further comprising a means for estimating a position of a user with respect to the Iridium satellite.
29. The method of claim 28, wherein the user position is estimated as a function of position within a multiple beam antenna.
- 25 30. The method of claim 29, wherein the expected offset range is a function of the user position.



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31. The method of claim 28, wherein user position is estimated as a function of a Doppler profile of the Iridium satellite.
32. The method of claim 31, wherein the expected offset range is a function of the user position.

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BLACK LOWE & GRAHAM PLLC



816 Second Avenue  
Seattle, Washington 98104  
206.381.3300 • F: 206.381.3301